some doubt as to the diagnosis in this case, it is of interest as tending to show that, if a case of cretinism be taken sufficiently early, treatment need not be kept up indefinitely. Up to the present time experience has shown that when thyroid treatment is stopped, the child retrogrades.

W. H. George, in the same journal, reports a case of cretinism treated by thyroid. The patient, a girl of 12, 2 ft 9 in. in height, had not grown in six years and showed all the signs of cretinism. She was given about a 5 grain tabloid daily. After a year and one month of treatment the child had grown 2½ inches, had cut a permanent molar and could talk fairly well. She was speechless before the beginning of treatment.

PATRICK, (Chicago).

THE PATHOLOGY OF EXOPHTHALMIC GOITRE.

Murray, in opening a discussion on the pathology of Graves' disease (*Brit. Med. Jour.*, Oct. 3, 1896) concluded that the cause of the disease was to be found in the thyroid gland, and he knew of no case in which this was found normal after death. He first compared the histology of the normal thyroid with thyroid tissue in a state of compensatory hypertrophy. The latter showed the formation of new alveoli and great increase of epithelial elements; folding of alveolar walls which increased the secreting surface; change of the epithelial cells from cubical to columnar form. These changes are entirely comparable to those found in Graves' disease, and he says:

"In conclusion I would maintain that in exophthalmic goitre there is an excessive formation and absorption of thyroid secretion, which may or may not be normal in character, and that the symptoms of the disease are due to the presence of this excess of secretion in the blood, and to its action upon the tissues and especially upon the nerve centres in the medulla.

The practical conclusion from this is that we should endeavor to improve our methods of treating the diseased thyroid gland. We want to be able to induce a moderate degree of fibrosis, and so imitate the natural process of recovery. Removal of a portion of the gland, though most successful in some cases, has proved to be a dangerous operation in others. Possibly injections of iodine, electrolysis, or some similar means of starting a limited fibrosis, may help us to attain the object we have in view without danger."

Edmunds agreed that changes of the thyroid in exophthalmic goitre are practically identical with those found in a part of the gland which has undergone hypertrophy in consequence of removal of a larger part of the gland, but unlike Murray he concludes from this that in Graves' disease too, the changes are simply those of compensatory hypertrophy, in other words, the change in the thyroid is not the primary lesion. He thought, too, that the disease cannot be due to hypersecretion of normal thyroid juice, because if this were the case there would be no occasion for a compensating hypertrophy. Although it is easy to draw a contrast between myxœdema and exophthalmic goitre and to conclude that because the first disease is due to a decrease of thyroid secretion the second must be due to an excess, there are objections to the theory.

"First, although the contrast between the symptoms of Graves's disease and myxœdema is well marked in the chronic forms, in the acute form (as seen in dogs) it is not at all marked; indeed the two affections resemble one another. In both these are well-marked tremors and occasional attacks of dyspnœa. Secondly, the theory of excessive secretion will not explain the exophthalmos; the injection subcutaneously of thyroid extract in large quantities into monkeys does not produce exophthalmos in these animals, although the condition can be readily enough produced in them by the injection of cocaine. Thirdly, the theory will not explain how in many recorded cases the exophthalmos is on one side, or mainly on one side and the enlargement of the thyroid mor-marked on that side. Fourthly, the not uncommon occurrence of myxe œdema following Graves's disease seems to support the secretion view; but the theory would require an interval of good health in the transitional stage. One finds mention of cases in which the two diseases appear to co-exist. Finally, against the secretion theory is the effect of thyroid feeding; different results have been obtained and the majority of observations seem to show that the treatment does no good, but it does not seem to do harm with the certainty that might be expected were the symptoms due to an excess of thyroid secretion. The primary lesion is a derangement of the metabolism of the body."

Robert Hutchison had concluded from experiments and clinical observations that the colloid matter of the thyroid was its only active ingredient, Baumann's thyroidin (thyroiodin?) being an artificial product and representing only part of it. He had entirely failed to find an alkaloid in the thyroid. To prove the thyroid origin of Graves's disease it must be shown that there is overproduction of colloid or that there is qualitative change in the secretion. As to the first, pathologists are agreed that no increase of colloid is observed in glands removed from patients with exophthalmic goitre and there is no evidence tending to show that the secretion is removed from the sacs more rapidly in that disease than in the normal individual. As to the second condition, the only practical way to test it is to try the physiological effects of the different ingredients of thyroids taken from cases of exophthalmic goitre. This he had done. By appropriate treatment the different ingredients were separated from a thyroid gland weighing 85 grammes, removed by operation from a patient with typical exophthalmic goitre. These were administered to two young women who were receiving thyroid treatment for a skin affection and obesity, respectively. The proteid-free extract was found to be inert. The colloid matter caused loss of weight, slight rise of temperature and some acceleration of the pulse. These symptoms were not more marked than had been produced by equivalent doses of sheep's thyroid to the same individuals. No palpitation was complained of in either case, nor was there the least degree of exophthalmos produced, or any appreciable alteration of the thyroid. To a dog, from which the thyroid had previously been removed, larger doses of the colloid (8 grammes of fresh gland daily, or about as much as 1½ thyroid of an average sheep) were given. The temperature of both showed a slight rise but no other symptom was produced. As far as these observations went they were directly opposed to the view that the thyroid in exophthalmic goitre produced a peculiar secretion.

"In conclusion, Dr. Hutchison was inclined to regard the disease, exophthalmic goitre, as consisting essentially in a specific change in tissue metabolism, probably due to a functional alteration in the central nervous system, the relationship of the enlargement of the thyroid to these changes being as yet undetermined, but not to be regarded as their primary cause. The beneficial effects of surgical operation in exophthalmic goitre were not necessarily opposed to this view. One might tumble downstairs both from the action of gravity and also because he was propelled by a kick from behind. Withdraw the propulsion of the kick and gravity itself would not start the descent. So it might be in exophthalmic goitre. Remove that tendency to acceleration of tissue metabolism which the normal secretion of the thyroid had been proved to produce, and even a functional loss of control on the part of the nervous system might be unable to start that train of metabolic changes which lead to the symptoms of exophthalmic goitre." PATRICK (Chicago.)